CALIFORNIA DEPARTMENT OF WATER RESOURCES
OFFICE OF WATER USE EFFICIENCY

2003 URBAN WATER CONSERVATION PROGRAM GRANT APPLICATION

LEAK DETECTION AND REPAIR

PARADISE IRRIGATION DISTRICT

Submitted by:

Paradise Irrigation District
5325 Black Olive Drive
P.O. Box 2409
Paradise, CA 95967

530.877.4971
[Fax 530.876.0483]
www.paradiseirrigation.com

PART A — PROJECT DESCRIPTION, ORGANIZATIONAL, FINANCIAL AND LEGAL INFORMATION

A-1 Urban Water Conservation Grant Application Cover Sheet

1. Applicant (Organization or affiliation): Paradise Irrigation District

2. Project Title: Leak Detection & Repair Program

3. Person authorized to sign and submit proposal:

Name, Title	Ray Auerbach, Manager
Mailing address	PO Box 2409
	Paradise, CA 95967-2409
Telephone	(530) 877-4971
Fax	(530) 876-0483
E-mail	rauerbach@paradiseirrigation.com

4. Contact person (if different):

Name, Title	
Mailing address	
Telephone	
Fax	
E-mail	

5. Funds requested (dollar amount): $114,458.40

6. Applicant funds pledged (local cost share) (dollar amount): $652,851.00

7. Total project costs (dollar amount): $767,309.40

8. Estimated net water savings (acre-feet/year): 219
   Estimated total amount of water to be saved (acre-feet): 4,374
   Over ____ years 20
   Benefit/cost ratio of project for applicant: 1.3
   Estimated $/acre-feet of water to be saved: 175.45 $/ac-ft

9. Project life (month/year to month/year): 10/2003 – 9/2022

10. State Assembly District where the project is to be conducted: 3

11. State Senate District where the project is to be conducted: 1

12. Congressional District(s) where the project is to be conducted: 2

13. County where the project is to be conducted: Butte

14. Do the actions in this application involve physical changes in land use, or potential future changes in land use?
    (a) Yes
    (if yes, complete the land use check list at http://www.calfed.water.ca.gov/adobe_pdf/Questionnaires_EC_Permits_LandUse.pdf and submit it with the proposal
    (b) No No

A-2 Application Signature Page

By signing below, the official declares the following:

The truthfulness of all representations in the application;

The individual signing the form is authorized to submit the application on behalf of the applicant;

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the application on behalf of the applicant; and

The applicant will comply with all terms and conditions identified in this Application Package if selected for funding.

Signature	Ray Auerbach, Manager Name and title	12/2/02 Date

A-3 Application Checklist

Complete this checklist to confirm all sections of this application package have been completed.

Part A: Project Description, Organizational, Financial and Legal Information

___√___A-1 Urban Water Conservation Grant Application Cover Sheet
___√___A-2 Application Signature Page
___√___A-3 Application Checklist
___√___A-4 Description of project
___√___A-5 Maps
___√___A-6 Statement of work, schedule
___√___A-7 Monitoring and evaluation
___√___A-8 Qualification of applicant and cooperators
___√___A-9 Innovation
___√___A-10 Agency authority
_____A-11 Operation and maintenance (O&M)

Part B: Engineering and Hydrologic Feasibility (construction projects only)

_____B-1 Certification statement
_____B-2 Project reports and previous studies
_____B-3 Preliminary project plans and specifications
_____B-4 Construction inspection plan

Part C: Plan for Environmental Documentation and Permitting

___√___C-1 CEQA/NEPA
___√___C-2 Permits, easements, licenses, acquisitions, and certifications
___√___C-3 Local land use plans
___√___C-4 Applicable legal requirements

Part D: Need for Project and Community Involvement

___√___D-1 Need for project
___√___D-2 Outreach, community involvement, support, opposition

Part E: Water Use Efficiency Improvements and Other Benefits

___√___E-1 Water use efficiency improvements
___√___E-2 Other project benefits

Part F: Economic Justification, Benefits to Costs Analysis

___√___F-1 Net water savings
___√___F-2 Project budget and budget justification
___√___F-3 Economic efficiency

Appendix: Benefit/Cost Analysis Tables

___√___Tables (Long Form) 1; 2; 5; 6 and 7

A-4 Description of Project

The Paradise Irrigation District (District) receives almost all of its water supply from surface runoff from the Little Butte Creek watershed. The firm yield of this surface water source is 7300 acre-feet per year, and an additional 200 acre-feet is available from one well. Current water demands are slightly greater than this firm supply, and additional water sources will be needed to supply an anticipated 20% growth in customer base. Water losses from leaking water mains have been the greatest contributor to the District's high percentage of water losses (32% in 1993). Current water losses have been reduced to approximately 17% due to a water main replacement program, but it appears that additional effort must be made to bring water losses down to an acceptable level (see Figure 1). The reduction in lost water will help to defer the need to construct expensive new facilities, and will reduce the amount of additional water supply sources needed to serve new development.

Two years ago the District started a limited leak detection project to determine if non-surfacing leaks were contributing to the high percentage of unaccounted for water. Prior to that time the District had so many surfacing leaks, there was no thought of looking for more leaks. The limited leak detection program provided information that has been used in preparing this grant application. The assumptions used in the benefit/cost analysis are based on this prior experience.

The proposed Leak Detection and Repair Program is designed to initially survey approximately 130 miles of water mains in the District. The majority of these mains are steel water mains constructed in the 1940's and 50's. The District maintains detailed leak records, and the proposed project will survey the mains with the worst leak record. It is anticipated that the survey will locate approximately 114 leaks that will be repaired by District forces. Once the original survey and repairs are complete, the District will survey the system approximately every two years to insure the original water savings are not diminished by subsequent leaks.

The total cost of the project over the 20-year period is estimated to be $767,000 including all labor, material, equipment, and overhead costs. The present value of this total cost is $491,000. The present value of total project benefits is $639,000, resulting in an overall benefit to cost ratio of 1.30 (see Table 7a). The District proposes to hire an experienced leak detection firm to perform the initial survey. District forces will complete the leak repairs. After the initial survey and repairs, the District will continue the leak detection program in subsequent years.

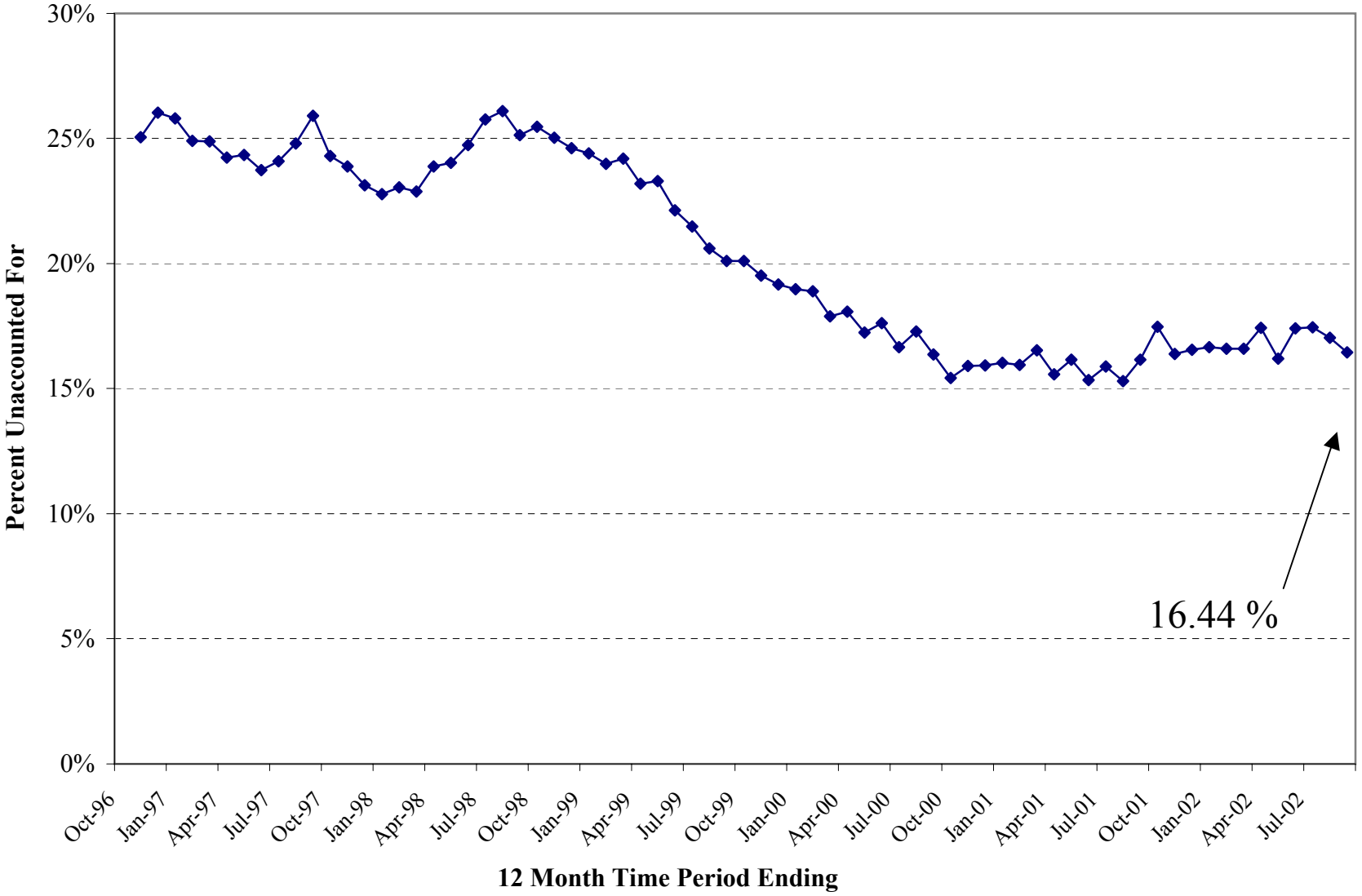
In addition to the capital cost savings, there is an additional cost savings by eliminating the cost of producing water that is lost from the system.

A-5 Maps

The project includes 130 miles of the total 169 miles of the District's water mains. A map of the District is included as Figure 2.

Figure 1. Unaccounted for Water

12 Month Time Intervals



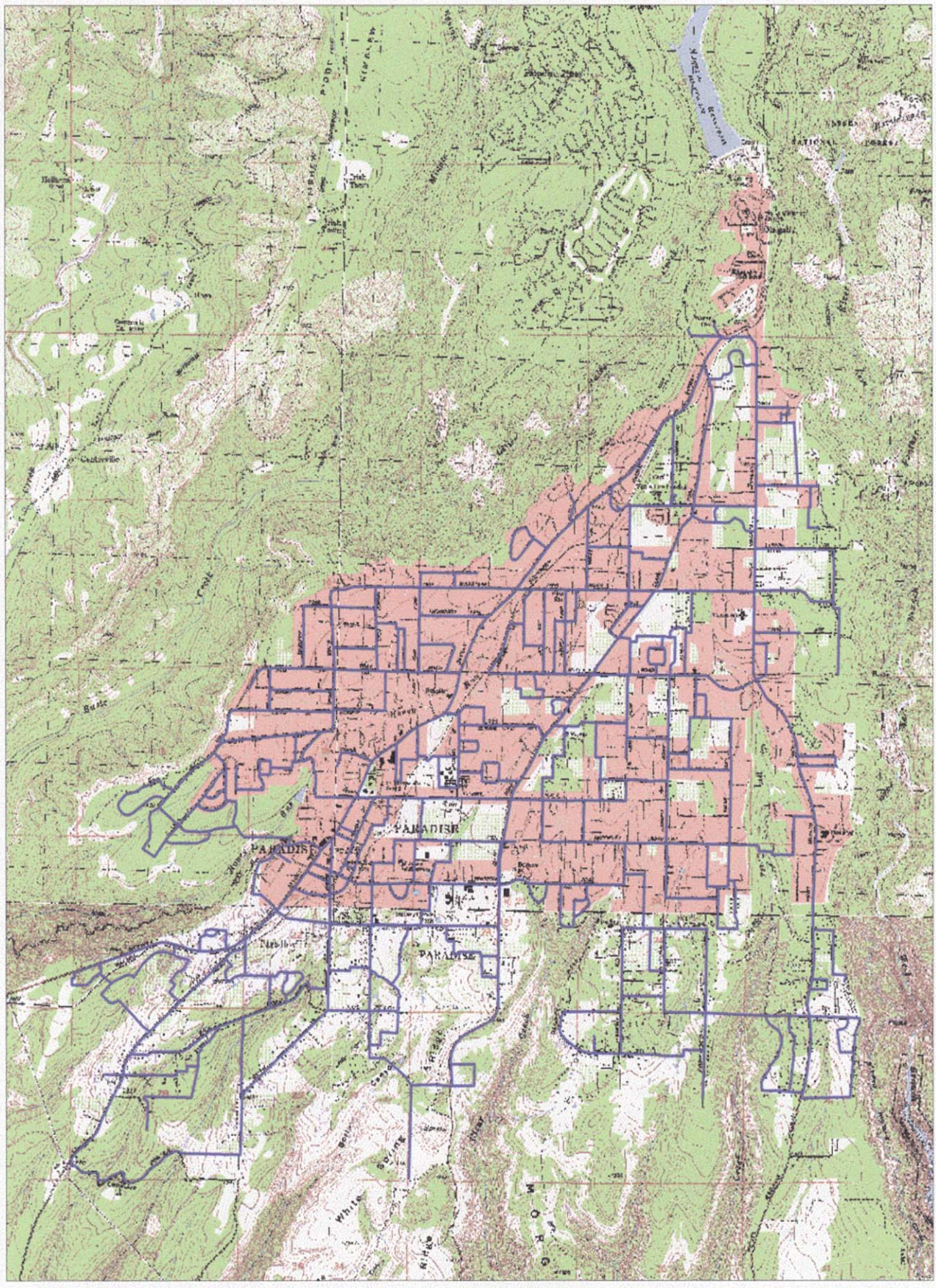


FIGURE 2.
PARADISE IRRIGATION DISTRICT
DISTRIBUTION SYSTEM

N

0 3000 6000 9000
Scale, feet

A-6 Statement of Work, Schedule

Assuming that the District is notified of the decision to fund this project in April 2003, work will begin immediately to complete the initial tasks such as the completion of CEQA documentation and the preparation of the bidding documents necessary to hire a leak detection contractor. The completion of the initial work will allow the leak detection work to begin approximately 30 days after a contract with the State is finalized in October 2003. The leak detection survey would be completed by December 31, 2003 and all leak repair work would be completed by August 31, 2004. Leak repair will actually begin soon after the detection survey is initiated. A timeline for the first year of the leak detection and repair program is shown in Figure 3.

After completion of all leak repairs, a final report on the project will be prepared.

The projected costs per task and quarterly expenditure projections are shown on Tables A-1 and A-2.

A-7 Monitoring and Evaluation

The proposed project will survey approximately 130 miles of water mains in the District to determine how much water from non-surfacing leaks is contributing to the District's high percentage of water losses. All identified leaks will be repaired as a part of this project. The monitoring and evaluation program will consist of the following:

- Measurement of miles of pipe surveyed
- Cost of leak detection
- Number of leaks found and repaired
- Estimated leakage rate for each leak
- Cost of leak repair
- Calculation of total water saved by program
- Comparison to project assumptions

The data listed above will be used to determine if the project goals are being met. In subsequent years, surveys will be completed to determine how fast new, non-surfacing leaks occur.

Data on leaks and water losses will be incorporated into the District's existing databases. The information is available in electronic format, and can be provided to any interested party on request.

A final report on the Leak Detection Program will be compiled and will be available on the District's web site, www.paradiseirrigation.com. The District has an active Public Outreach Program that includes presentations to service clubs and community organizations such as the Chamber of Commerce. The District is also active in the American Water Works Association. After completion of the project, the District intends to make presentations about the project to many of these groups.

Figure 3. Leak Detection and Repair Project Plan and Work Schedule

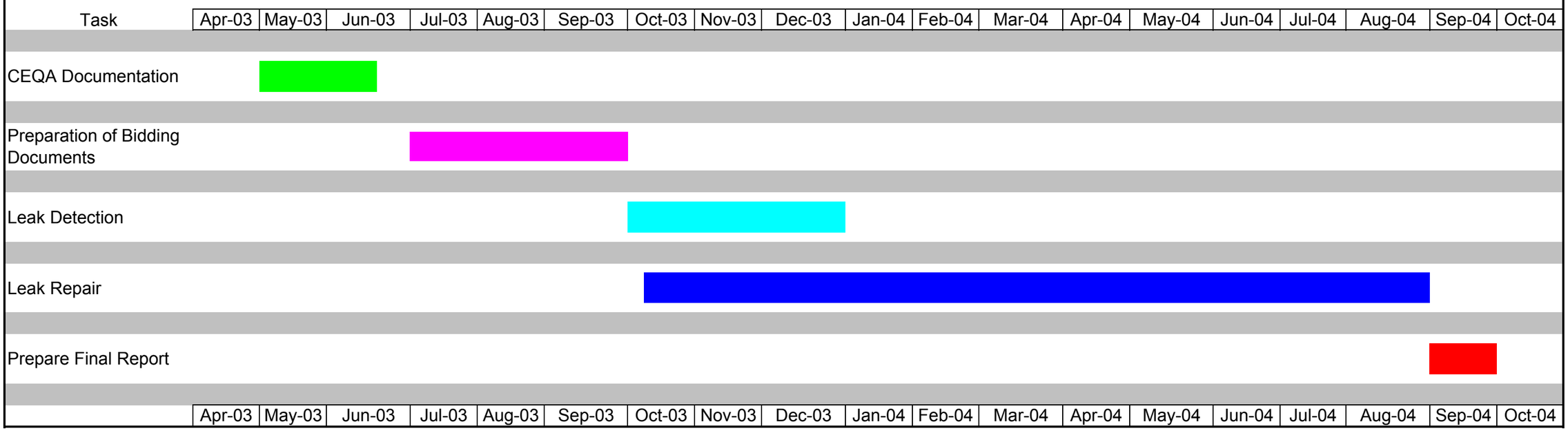


Table A1. Leak Detection and Repair, Projected Costs by Task

CEQA Documentation	$1,200
Preparation of Bidding Documents	$3,000
Leak Detection	$41,148
Leak Repair	$67,860
Prepare Final Report	$1,250
Total	$114,458

Table A2. Leak Detection and Repair Project - Quarterly Expenditure Projection

Quarter:						
Beginning	4/1/2003	7/1/2003	10/1/2003	1/1/2004	4/1/2004	7/1/2004
Ending	6/30/2003	9/30/2003	12/31/2003	3/31/2004	6/30/2004	9/30/2004
Expenses	$1,200	$3,000	$59,655	$18,507	$18,507	$13,588

A-8 Qualifications of the Applicant and Cooperators

The project will be managed by the following District Employees:

Ray Auerbach, District Manager – Overall project management
John Price, Field Superintendent – Supervision of leak detection and repair

Resumes for these employees are included in Appendix A.

External Cooperators: The District intends to employ a Leak Detection Contractor familiar with this type of project. The contractor will be selected using a public bidding process, and will be required to have at least five years experience in water utility leak detection and utilize the most up-to-date equipment available.

A-9 Innovation

Utilizing Latest Technology

Although leak detection programs have been carried out by water utilities for many years, newer technology is making this process more accurate and cost effective. The District will specify that the contractor utilize the latest technology and equipment available to conduct this study. Rather than utilizing microphones only to detect locations of leaks, a computer based leak sound correlator will be used to pinpoint leaks.

Accurate Leakage Rate Measurements

Another area that the District will focus on is the accurate measurement of leakage rates before the leaks are repaired. Leak detection and repair programs usually involve an estimate of the size of the leak in gallons per minute. Inaccurate estimates can have a significant impact on the economics of a leak detection program since benefits are largely attributable to the amount of water saved. The District proposes to accurately measure the rate of each leak by pumping the water from the excavation into a container with a known volume (5 gallon bucket or 55 gallon drum), and the measuring the time it takes for the water level in the excavation to return to the previous level.

Minimizing Excavation Size

Verifying leak locations, even with the newest technology, is still a time consuming part of a leak detection and repair program. The District plans to utilize a vacuum excavator to verify the location of leaks. The vacuum excavator has the ability to expose a water main with an excavation as small as 8" by 8". This is compared to a traditional excavation of three feet by five feet using a backhoe. The smaller excavation saves a considerable amount of time and causes less disruption of traffic.

A-10 Agency Authority

1. Attached (Figure 4) is a Resolution authorizing the District Manager to submit an application for this Urban Water Conservation Grant. Authorization to enter into a funding contract will be provided after the funding contract is presented to the District.
2. The Paradise Irrigation District was formed in 1916 and continues to operate under the authority of the State of California Water Code, Division 11, Section 20500 to 29978 derived from the 1897 Irrigation District Law.
3. The District is not required to hold an election before entering into a funding contract with the State.
4. The funding agreement will not be subject to review and/or approval by other government agencies.
5. There is no pending litigation that may impact the financial condition of the District, the operation of water facilities, or its ability to complete the proposed project.

A-11 Operations and Maintenance

Since this is not a construction project, completion of this section is not required.

Part B—Engineering and Hydrologic Feasibility

Since this is not a construction project, completion of this section is not required.

Figure 4. Resolution Authorizing Grant Application

PARADISE IRRIGATION DISTRICT

RESOLUTION NO. 2002-03

A RESOLUTION OF THE BOARD OF DIRECTORS OF
THE PARADISE IRRIGATION DISTRICT
MAKING APPLICATION(S) TO THE CALIFORNIA DEPARTMENT OF WATER
RESOURCES TO OBTAIN A PROPOSITION 13
URBAN WATER CONSERVATION CAPITAL OUTLAY GRANT

RESOLVED by the Board of Directors of the Paradise Irrigation District that pursuant and subject to all of the terms and provisions of the Urban Water Conservation Program (Chapter 8, Article 6 under the Safe drinking Water, Clean Water, Watershed Protection and Flood Protection Act [Proposition 13], Water Code Division 26), application by this Paradise Irrigation District be made to the California Department of Water Resources to obtain grant(s) under the Proposition 13 Urban Water Conservation Capital Outlay Grant Program.

The District Manager of the Paradise Irrigation District is hereby authorized and directed to prepare the necessary data, make investigations, sign, and file such application(s) with the California Department of Water Resources.

PASSED AND ADOPTED at a regular meeting of the Board of Directors of the Paradise Irrigation District on this 20th day of February 2002, by the following vote:

AYES: Directors Claude Powers, Stan Zemansky, Frank Caunt, John Heinke, and Rick Hall.
NOES: None.
ABSENT: None.

PARADISE IRRIGATION DISTRICT

Frank G. Caunt, President

ATTEST:

Katherine M. Welborn, Secretary

Part C—Plan for Completion of Environmental Documentation and Permitting Requirements

C-1 California Environmental Quality Act and National Environmental Policy Act

Since this project consists solely of monitoring and repair of existing water mains and appurtenances, it is believed to be categorically exempt from the requirements of CEQA, and is not subject to NEPA requirements. A final determination of these requirements will be made as soon as the District is notified that the project has been accepted for funding. A copy of the Staff Preliminary Review for this project is contained in Appendix B.

C-2 Permits, Easements, Licenses, Acquisitions, and Certifications

The proposed project requires encroachment permits from the Town of Paradise for all excavations within Town streets. These permits will be obtained when locations of leaks are determined. Repair of leaks may require flushing of water mains and/or discharge of water into local watercourses. These discharges are permitted in the District's NPDES permit included in Appendix C.

C-3 Local Land Use Plans

This project is located within the Town of Paradise, but since the project consists of monitoring and repair of existing facilities, there are no impacts related to the Town's General Plan.

C-4 Applicable Legal Requirements

This project is subject to the following regulations:

1. Town of Paradise Encroachment Permit requirements
2. NPDES Permit Provisions
3. Paradise Irrigation District Accident Prevention Plan

The contractor and District employees will comply with all applicable laws, regulations and permit requirements.

Part D- Need for Project and Community Involvement

D-1 Need for the Project

The Paradise Irrigation District (District) receives almost all of its water supply from surface runoff from the Little Butte Creek watershed. The firm yield of this surface water source is 7300 acre-feet per year, and an additional 200 acre-feet is available

from one well. Current water demands are slightly greater than this firm supply, and additional water sources will be needed to supply an anticipated 20% growth in customer base. Water losses from leaking water mains have been the greatest contributor to the District's high percentage of water losses (32% in 1993). Current water losses have been reduced to approximately 16% due to a water main replacement program, but it appears that additional effort must be made to bring water losses down to an acceptable level (see Figure 1). The reduction in lost water will help to defer the need to construct expensive new facilities, and will reduce the amount of additional water supply sources needed to serve new development.

Paradise Irrigation District must augment its water supply to meet current demands in dry years and to provide supplies for future anticipated growth. Recent studies have shown that the cost of augmenting water supplies is very expensive, and it appears that reducing water lost to pipeline leaks is a cost effective method of reducing these needs.

Butte County is a major focus for CALFED because of its abundant groundwater reserves (in the valley, not on the Paradise Ridge) and critical wildlife habitat. Butte County completed a Water Inventory and Analysis in 2001 using Prop. 204 funds. That analysis identified water supply problems in the Paradise Ridge area after one drought year similar to 1977.

In addition, the Butte Creek drainage area has been identified as a prime spring run salmon stream. Improved water management and water use efficiency will help maintain the improvements in that tributary to the Sacramento River. Finally, CALFED has adopted the California Urban Water Conservation Council's Best Management Practices for Urban Water Conservation. Distribution System Audits, Leak Detection and Repair is a BMP that has been shown to be cost effective throughout California.

D-2 Outreach, Community Involvement, Support, Opposition

The District is working closely with the Butte County Department of Water and Resource Conservation and the Del Oro Water Company to investigate solutions to the water supply problems on the Paradise Ridge. A Memorandum of Understanding between these three agencies requires several public meetings each year to inform the public on the progress of this joint effort.

The District has, and will continue to make presentations to local service clubs and other organizations to explain the District's water supply situation. Response to the District's plans to enhance the community water supply is very positive. The public is knowledgeable about the impacts of the high percentage of lost water due to leaks, and is supportive of programs to reduce these water losses. See Appendix D for letters of support for this grant application. There is no known or anticipated opposition to this project.

Part E—Water Use Efficiency Improvements and Other Benefits

E-1 Water Use Efficiency Improvements

This project will result in an improvement in water use efficiency due to a significant reduction in the amount of water lost to water main leaks. The amount of water needed to be supplied from new facilities will be reduced, and the costs of leak repair will be reduced. Treatment costs will also be reduced due to the reduction in the amount of water treated. The quantifiable benefits resulting from the proposed project are as follows:

1. Additional water available due to the reduction in leaks is estimated to be 309 acre-feet as a result of the first year of this program.
2. The total amount of water saved as a result of the proposed 20 year program is 4,374 acre feet
3. The estimated current value of net operating cost savings from the first year of this program is $10,300.
4. The estimated current value of net operating and capital cost savings over the life of the project is $638,700.

E-2 Other Project Benefits

To the extent that leakage from existing water mains is reduced, less water will be diverted from Little Butte Creek, the District's primary water source. Less diversion from the creek results in increased flow in Little Butte Creek below the District's reservoirs. These increased flows end up in the Delta after flowing to Butte Creek and then the Sacramento River. These increased flows can have a positive impact on water availability and water quality in these systems. The Butte Creek drainage area has been identified as a prime spring run salmon stream.

Part F – Economic Justification: Benefits to Costs

F-1 Net Water Savings

The proposed leak detection program consists of surveying 130 miles of the District's water mains and repairing all leaks that are discovered. It is believed that all water savings are net savings since the Paradise Ridge is a hard rock formation and has no defined groundwater aquifer. The area does not appear to have a direct hydraulic connection to known aquifers located many miles from the District.

The proposed leak detection project is estimated to save 309 acre-feet during the first year of the project and a total of 4,374 acre-feet over the 20-year review period (reported in Table 1). Calculations are based on historic leak records, including cost of leak repair and statistics from prior leak detection projects of a limited scope. The calculations are summarized in Appendix E.

Please note: Because this project has benefits that vary over time, the 'Long Form' economic tables have been used.

F-2 Project Budget and Budget Justification

Capital Costs for the proposed project budget for the first year of the Leak Detection and Repair Program are shown in Table 2, below. Ongoing Capital Costs for subsequent years of the Leak Detection and Repair Program are summarized in Table 5, Project Costs (Long Form), below.

Given the fact that this project does involve the creation of any new facilities that would require maintenance, undertaking the project creates no new operation and maintenance costs. If pipeline leaks surface during the interval between leak detection surveys, such leaks would be repaired under the District's ongoing distribution system maintenance program. Therefore, Long Form Table 3, summarizing ongoing project driven operations and maintenance costs, has not been used.

Table 1: Project Performance

Water Conservation Projects

Total Water Savings (AF)(1)	4374

(1) During Project Life, From Table 6

Table 2: Capital Costs

Water Conservation Projects

	Capital Cost Category (a)	Cost (b)	Contingency Percent (c)	Contingency $ (d) (bxc)	Subtotal (e) (b+d)
(a)	Land Purchase/Easement	0	0	0	0
(b)	Planning/design/Engineering	0	0	0	0
(c)	Materials/Installation	58,175	0	0	58,175
(d)	Structures	0	0	0	0
(e)	Equipment Purchases/rentals	16,965	0	0	16,965
(f)	Environmental Mitigation/Enhancement	0	0	0	0
(g)	Construction Administration/Overhead	5,450	0	0	5,450
(h)	Project Legal/License Fees	0	0	0	0
(i)	Other (Consultant Services-Leak Detection)	33,868	0	0	33,868
(j)	Total (1) (a + ... + i)				114,458

(1) Costs must match Project Budget prepared in Section F-2.

Table 5: Project Costs (Long Form)

Water Conservation Projects

Year (a)	Water Conservation Savings (b) (acre-feet)	Discount Factor (6.0%) (c)	Capital Costs (d)	Operation/ Maintenance Costs (e)	Total Costs (f) (d+e)	Total Discounted Costs (g) (cxf)
0	0	1.000	114,458	0	114,458	114,458
1	309	0.943	0	0	0	0
2	200	0.890	76,469	0	76,469	68,058
3	299	0.840	0	0	0	0
4	194	0.792	74,042	0	74,042	58,641
5	289	0.747	0	0	0	0
6	188	0.705	71,614	0	71,614	50,488
7	280	0.665	0	0	0	0
8	181	0.627	69,187	0	69,187	43,380
9	270	0.592	0	0	0	0
10	175	0.558	66,759	0	66,759	37,252
11	261	0.527	0	0	0	0
12	169	0.497	64,331	0	64,331	31,973
13	251	0.469	0	0	0	0
14	162	0.442	61,904	0	61,904	27,361
15	242	0.417	0	0	0	0
16	156	0.394	59,476	0	59,476	23,434
17	232	0.371	0	0	0	0
18	149	0.350	57,049	0	57,049	19,967
19	223	0.331	0	0	0	0
20	143	0.312	52,020	0	52,020	16,230
TOTAL	**4,374**		**767,309**	**0**	**767,309**	**491,242**

F-3 Economic Efficiency

Direct economic benefits anticipated from the proposed Leak Detection and Repair Program comprise capital cost savings consisting of the alternative cost for additional reservoir storage capacity, and the avoided cost of expenditures for increased capacity for raw water pumping, and water treatment. Capacity savings for pumping and treatment have been calculated based on the actual cost of construction for capacity in the District's existing pumping and treatment facilities.

Since the District's annual water demand currently exceeds firm supply, the District has undertaken a feasibility study of expansion of the District's reservoir storage at Paradise Lake (Geotechnical Services, Paradise Dam and Reservoir, Feasibility Study for Raising Paradise Lake, URS Corporation, 2002). Alternative cost savings for reservoir storage have been based on Alternative P-II RE from this report, which is the lowest cost alternative per acre-foot of storage developed. The District Board of Directors has indicated their interest in pursuing the Paradise Reservoir enlargement project in order to meet the requirements of continued growth and increased water demand. (See Appendix E for minutes of the District Board regarding a potential raise of Paradise Dam.) It is anticipated that the environmental permitting phase for this project could commence within three to five years.

Project benefits due to water supply benefits are summarized in Table 6. The economic efficiency analysis based on capital cost savings alone predicts a benefit to cost ratio of 1.12 (see Table 7).

Additional quantifiable economic benefits come from Operation and Maintenance (O&M) cost savings consisting of the avoided incremental cost of water treatment (energy and chemicals) for water lost to leaks. The value of this benefit has been computed on the basis of current energy costs, and chemical prices and feed rates, and is summarized (along with water supply benefits) in Table 6a. The economic efficiency analysis based on capital cost savings *and* O&M savings results in a benefit to cost ratio of 1.30 as shown in Table 7a.

The economic efficiency analyses have been based on the following information and assumptions:

- The economic life of the project is assumed to be 20-years.
- Inflation has been assumed to be zero.
- A six percent discount rate has been used.
- All costs and benefits in the analysis have been converted to present value.
- All anticipated project costs have been included in the analysis regardless of funding source.
- Based on historical trends in leaks and unaccounted-for water it is assumed that, of the current annual 1,400 acre-feet unaccounted-for, 1,000 acre-feet of this amount is due to mainline leaks.

Table 6: Project Benefits (Long Form)

Water Conservation Projects

Year (a)	Water Conservation Savings (b) (acre-feet)	Discount Factor (6.0%) (c)	Water Supply Benefits(1) (d)	Total Discounted Benefits (e) (cxd)
0	0	1.000	551,590	551,590
1	309	0.943	0	0
2	200	0.890	0	0
3	299	0.840	0	0
4	194	0.792	0	0
5	289	0.747	0	0
6	188	0.705	0	0
7	280	0.665	0	0
8	181	0.627	0	0
9	270	0.592	0	0
10	175	0.558	0	0
11	261	0.527	0	0
12	169	0.497	0	0
13	251	0.469	0	0
14	162	0.442	0	0
15	242	0.417	0	0
16	156	0.394	0	0
17	232	0.371	0	0
18	149	0.350	0	0
19	223	0.331	0	0
20	143	0.312	0	0
TOTAL	**4,374**		**551,590**	**551,590**

(1) Total avoided costs, alternative costs or revenue benefits.

Year 0 benefit includes capacity cost savings for the project life,
(minimum capacity saved times unit cost of capacity.)

Table 6a: Project Benefits (Long Form)

(Including Benefit form Avoided O&M Costs)

Water Conservation Projects

Year (a)	Water Conservation Savings (b) (acre-feet)	Discount Factor (6.0%) (c)	Water Supply Benefits(1) (d)	Avoided O&M Costs (e)	Total Benefit (f) (d+e)	Total Discounted Benefits (g) (cxf)
0	0	1.000	551,590	0	551,590	551,590
1	309	0.943	0	10,302	10,302	9,715
2	200	0.890	0	6,691	6,691	5,955
3	299	0.840	0	9,984	9,984	8,386
4	194	0.792	0	6,479	6,479	5,131
5	289	0.747	0	9,665	9,665	7,220
6	188	0.705	0	6,266	6,266	4,418
7	280	0.665	0	9,346	9,346	6,215
8	181	0.627	0	6,054	6,054	3,796
9	270	0.592	0	9,028	9,028	5,344
10	175	0.558	0	5,841	5,841	3,260
11	261	0.527	0	8,709	8,709	4,590
12	169	0.497	0	5,629	5,629	2,798
13	251	0.469	0	8,390	8,390	3,935
14	162	0.442	0	5,417	5,417	2,394
15	242	0.417	0	8,072	8,072	3,366
16	156	0.394	0	5,204	5,204	2,050
17	232	0.371	0	7,753	7,753	2,876
18	149	0.350	0	4,992	4,992	1,747
19	223	0.331	0	7,435	7,435	2,461
20	143	0.312	0	4,779	4,779	1,491
TOTAL	**4,374**		**551,590**			**638,738**

(1) Total avoided costs, alternative costs or revenue benefits.

Year 0 benefit includes capacity cost savings for the project life,
(minimum capacity saved times unit cost of capacity.)

Table 7: Benefit/Cost Ratio

Water Conservation Projects
(Long Form)

Project Benefits ($)(1)	551,590
Project Costs ($)(2)	491,242
Benefit/Cost Ratio	1.12

(1) From Table 6: Project Benefits (Long Form)
(2) From Table 5: Project Costs (Long Form)

Table 7a: Benefit/Cost Ratio

(Including Benefit from Avoided O&M Costs)

Water Conservation Projects
(Long Form)

Project Benefits ($)(1)	638,738
Project Costs ($)(2)	491,242
Benefit/Cost Ratio	1.30

(1) From Table 6: Project Benefits (Long Form)
(2) From Table 5: Project Costs (Long Form)

- During the ten-year period from 1984-1993, immediately prior to instituting a mainline replacement program, the District averaged a 20 percent annual rate of increase in surfacing pipeline leaks, equating to a six-fold increase in leaks over the ten-year period. For the purposes of this analysis the number of mainline leaks per year is assumed to increase at a similar rate, resulting in a return of a similar number of leaks within a two-year period.
- The cost to repair a mainline leak is based on the District's actual average cost per repair.
- The number of leaks per mile of main surveyed is based on the District's actual experience with pilot leak detection surveys. Similarly, the number of 'dry holes' resulting from surveyed leaks and the average flow rate per leak are based on the District's pilot surveys.
- Consideration has been given to the fluctuation in the number of leaks over time, given period leak detection survey and repair. The capital cost saving for system capacity has been computed on the basis of the minimum reduction in demand experienced over the 20-year project life.

Additional information regarding the economic efficiency analysis and a detailed tabulation of the benefit to cost ratio analysis is contained in Appendix E.

APPENDIX A

RESUMES

RESUME

RAY A. AUERBACH

EXPERIENCE SUMMARY

Ray Auerbach is the Manager of the Paradise Irrigation District and has 35 years experience in water resources finance, administration, engineering, operations and intergovernmental relations. Mr. Auerbach has a strong background in engineering and project management for various types of projects, including pipeline replacement.

DETAILED EXPERIENCE

Paradise Irrigation District

- Manager of the Paradise Irrigation District from June 1998 to present. Under policy direction of a five-member elected Board of Director is responsible for all District functions including engineering, finance, operations and maintenance and intergovernmental and public relations.
- Secured a $493,000 grant from the Department of Water Resources to investigate the feasibility of additional water supply options.
- Managed and participated in the preparation of the 2000 Urban Water Management Plan.
- Revised financial and management reports submitted to the Board of Directors.
- Participated in Drafting the Memorandum of Understanding between the District, the Butte County Department of Water and Resource Conservation and the Del Oro Water Company.

Raymond C. Miller, P.E. and Roberson and Associates

- Associated with Raymond C. Miller and Don Roberson from June 1997 to June 1998.
- Provided contract management services to the City of San Juan Capistrano and the Tri-Cities Municipal Water District.

Capistrano Valley Water District

- General Manager from July 1987 to June 1997. Assistant General Manager/District Engineer from January 1986 to June 1987.
- Reduced unaccounted for water from over 10% to 5%
- Established a replacement program to replace the District's aging infrastructure.
- Secured additional water capacity in a new regional water supply pipeline.

City of Anaheim Public Utilities Department

- Served in several positions between December 1968 and December 1985, including nine years as Water Engineering Manager.
- Responsible for budgeting, planning, engineering and contract engineering for Orange County's largest retail water agency.

Los Angeles County Flood Control District

- Civil Engineering Assistant and Senior Civil Engineering Assistant from July 1966 to November 1968.

Irvine Ranch Water District Board of Directors

- Member of Board of Directors from December 1979 to June 1998.

PROFESSIONAL AFFILIATIONS

- American Water Works Association
- American Society of Civil Engineers

PROFESSIONAL REGISTRATION

- Registered Civil Engineer in California, No. 20236

EDUCATION

- East Los Angeles College – Associate of Arts Degree, 1964
- California State University at Los Angeles – Bachelor of Science Degree, Civil Engineering, 1966
- Numerous training sessions and seminars in supervision, management, public relations, etc.

RESUME

JOHN H. PRICE

EXPERIENCE SUMMARY

John Price is the Field Superintendent for the Paradise Irrigation District and has 30 years experience in construction and construction management. Mr. Price has considerable experience in underground construction with an emphasis on water main, fire hydrant and other water system component installation and maintenance.

DETAILED EXPERIENCE

Paradise Irrigation District

- **Superintendent** of the Paradise Irrigation District, with nine years of experience. Responsible for the day-to-day operations of the District's water distribution system consisting of approximately 170 miles of pipeline and nearly 10,000 water meter services.
- Supervise a 20-person crew engaged in system operation, maintenance and construction, facility upkeep, fleet vehicle maintenance, meter reading, etc.
- Develop and oversee the District's Capital Improvement program for pipeline replacement averaging about 9,000 feet of pipe replacement yearly.
- Develop and maintain records documenting systems repairs to include water main leaks, service pipe leaks and fire hydrant installation and repair and the District's leak detection program.

- **Utility Foreman** of the Paradise Irrigation District with eight years of experience. Responsible for installing and maintaining the District's water pipe system.

- **Equipment Operator** for the Paradise Irrigation District with five years' experience. Operated heavy equipment during the installation and maintenance of the District's water distribution system.

City of Santa Cruz

- **Construction Specialist** for the City of Santa Cruz Street Department with seven years' experience. Operated equipment and supervised crews during the construction and maintenance of City streets and drainage systems. Built roads, curbs, gutters, sidewalks, and installed storm drain systems and piping.

Education

- Associate of Arts Degree in Drafting Technology.
- U.S. Army Signal School, Fort Monmoth, New Jersey, Fixed Plant Carrier Equipment Repair School.

APPENDIX B

PROJECT ENVIRONMENTAL DOCUMENTS

STAFF PRELIMINARY REVIEW
PARADISE IRRIGATION DISTRICT
PARADISE, CALIFORNIA

Date November 26, 2002

Name and Title of Staff member(s) reviewing the activity:

Ray Auerbach, Manager

Activity Description:

Leak Detection and Repair Program to initially survey approximately 130 miles of water mains in the District. The majority of these mains are steel water mains constructed in the 1940's and 50's. The District maintains detailed leak records, and the proposed project will survey the mains with the worst leak record. It is anticipated that the survey will locate approximately 114 leaks that will be repaired by District forces. Once the original survey and repairs are complete, the District will survey the system approximately every two years to insure the original water savings are not diminished by subsequent leaks.

	Yes	No
• Is the activity a "Project" as defined in Section 15378?	x	
• Is the activity "Ministerial" in nature as defined in Section 15369?		x
• Is the activity an "Emergency" action as defined in Section 15269?		x
• Does the activity involve "Feasibility & Planning Studies" as defined in Section 15262?		x
• Is the activity covered by a Categorical Exemption as described in Section 15300?	x	
• Is the activity covered by the "Lead Agency" concept as described in Section 15064?		x

Description of points considered by staff in reaching the above findings:

Categorical Exemption Class I, Existing Facilities – This project involves the repair or minor alteration of existing District facilities. There is no expansion or use beyond that previously existing.

APPENDIX C

NPDES DEWATERING PERMIT

California Regional Water Quality Control Board
Central Valley Region
Robert Schneider, Chair

Winston H. Hickox
Secretary for Environmental Protection

Sacramento Main Office
Internet Address: http://www.swrcb.ca.gov/~rwqcb5
3443 Routier Road, Suite A, Sacramento, California 95827-3003
Phone (916) 255-3000 • FAX (916) 255-3015

Gray Davis
Governor

cc: Rick Tirrano (2??) E Tank well file

RECEIVED
NOV 15 2001
PARADISE IRRIGATION DIST

13 November 2001

Mr. Ray Auerbach
Paradise Irrigation District Manager
P.O. Box 2409
Paradise, CA 95967

NOTIFICATION OF APPLICABILITY OF GENERAL WASTE DISCHARGE REQUIREMENTS ORDER NO. 5-00-175 (NPDES NO. CAG995001), PARADISE IRRIGATION DISTRICT, NEW MUNICIPAL SUPPLY WELL, E TANK WELL, PARADISE, BUTTE COUNTY

You have submitted a complete *Notice of Intent* for the above referenced project. It is our determination that the project meets the required conditions to be approved under the *General Order for Dewatering and Other Low Threat Discharges To Surface Waters, No. 5-00-175 (General Order)*. Enclosed is a copy of the General Order. All requirements contained in the General Order will be applicable to your project. You are hereby assigned **General Order No. 5-01-17568** for the discharge of ground water during development and testing of the new municipal water well.

General Order No. 5-01-175 prescribes minimum wastewater monitoring requirements for compliance. Please note that the Monitoring and Reporting Program sets forth minor requirements; and that additional monitoring may be necessary if petroleum hydrocarbons are encountered.

PROJECT LOCATION

The project is located on Nunnely Road near the cross street of Clark Road in the Town of Paradise, T22N R3E, Section 23, MDB&M.

PROJECT DESCRIPTION

The project includes temporary discharge of ground water for development and testing of a new municipal water supply well. The intermittent discharge of 1000 GPM will be discharged to Little Dry Creek, a tributary to the Sacramento River.

GENERAL INFORMATION

1. The project activities shall be in accordance with the requirements contained in the General Order and in accordance with the information submitted in the Notice of Intent.

2. The required annual fee as specified in the annual billing you will receive from the State Water Resources Control Board shall be submitted until this Notice of Applicability is officially revoked.

3. You must comply with the Monitoring and Reporting Program (Attachment B, Water Suppliers' Pollution Prevention and Monitoring and Reporting Plan). Quarterly monitoring results must be submitted to the Regional Board's Redding office by the 20th day of the month following each calendar quarter.

4. Failure to abide by the conditions of the General Order could result in an enforcement action as authorized by the provisions of the California Water Code.

If you have any questions or comments regarding this permit, please contact Stacy Matthews of my staff at (530) 224-4993, or 415 Knollcrest Drive Suite 100, Redding, California, 96002.

GARY M. CARLTON
Executive Officer

Enclosure: General Order No. 5-00-175
Standard Provisions

cc: U.S. Environmental Protection Agency, Region 9, San Francisco
U.S. Fish and Wildlife Service, Sacramento
Department of Fish and Game, Region 2, Ranch Cordova
Department of Health Services, Office of Drinking Water, Redding
Department of Water Resources, Northern District, Red Bluff
Ms. Frances McChesney, OCC, SWRCB, Sacramento
Mr. James Maughan, DWQ, SWRCB, Sacramento
Ms. Della Kramer, RWQCB, R5, Sacramento

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 5-00-175

NPDES NO. CAG995001

WASTE DISCHARGE REQUIREMENTS
GENERAL ORDER FOR
DEWATERING AND OTHER LOW THREAT DISCHARGES
TO SURFACE WATERS

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

1. Miscellaneous public and private businesses (hereafter Discharger) often need to discharge clean or relatively pollutant-free wastewater that poses little or no threat to water quality. This General Permit covers the discharge of certain categories of these discharges to waters of the United States.

2. The following discharges may be covered by this permit provided they do not contain significant quantities of pollutants and they are either (1) four months or less in duration, or (2) the average dry weather discharge does not exceed 0.25 mgd:

   a. Well development water

   b. Construction dewatering

   c. Pump/well testing

   d. Pipeline/tank pressure testing

   e. Pipeline/tank flushing or dewatering

   f. Condensate discharges

   g. Water supply system discharges

   h. Miscellaneous dewatering/low threat discharges

   These wastewaters may be produced and treated on a continuous or batch basis.

3. Individual waste discharge requirements are presently adopted for these discharges, necessitating approximately four or more months of lead time for the project. Adoption of this general permit will significantly reduce the time spent on dewatering and other low water quality threat projects.

4. Water quality characteristics most likely of concern for these discharges include settleable material, suspended material, color, turbidity and chlorine. Dischargers should hire professional

engineers to assure pollutants will be properly treated prior to discharge if there is any doubt about the ability for continuous compliance with requirements.

5. This permit is intended to regulate dewatering and other low water quality threat discharges identified in Finding No. 2. It is not intended for ground water cleanup projects or to regulate discharges that contain acute or chronic toxicity, chemical or organic constituents, bacteria, herbicides, pesticides, oil and grease, radioactivity, salinity or temperature that may adversely impact beneficial uses or exceed any water quality objective or standard.

   There are many sites of ground water contamination in the Central Valley. The contamination may have been caused by many factors including industrial activity, underground leaking tanks and farming practices. This permit is not intended for use on groundwater where such contamination exists even if the project and/or proponent has no connection with the contamination.

6. Water suppliers may have numerous intentional and unintentional releases of fresh water to surface waters and surface water drainage courses due to many factors including system failures, pressure releases, and pipeline/tank flushing and dewatering. For the purpose of this Order these multiple discharges shall be considered a project. This General Permit may serve as waste discharge requirements for such public and private water suppliers including Irrigation Districts, Water Districts and Water Agencies. A Pollution Prevention and Monitoring and Reporting Plan may be developed by the Discharger as established in Attachment B for approval by the Regional Board Executive Officer. Compliance with this General Permit requires removal of chlorine and other constituents normally found in these discharges to provide protection of downstream beneficial uses including fish and other aquatic life.

7. The Discharger agrees immediately to stop any discharge authorized by these requirements in the event there is a violation, or threatened violation, of this permit or if the Regional Board Executive Officer so orders. The Discharger shall notify the Board as soon as is reasonably possible by telephone, with a written confirmation within two weeks, when a violation of this Order is known to exist. The discharge may not be resumed until authorized by the Executive Officer.

8. The Board may prescribe individual waste discharge requirements for any discharge. If individual waste discharge requirements are issued for a discharge, the applicability of this General Permit to the discharge is immediately terminated.

9. This Order shall apply to the individuals, municipalities or companies discharging and to individual property owners and/or operators (collectively Discharger) which have submitted a Notice of Intent (NOI) and appropriate fee for coverage under this General Order. Dischargers that meet the standards of this Order and who submit a completed NOI and appropriate fee are authorized to discharge under the terms and conditions of this General Permit unless individual waste discharge requirements are issued or the discharge is prohibited.

10. A separate NOI and filing fee must be filed with the Regional Board for each system owner or project to be eligible for coverage under this Order. The NOI form (Attachment A) must be completed in order to obtain coverage under this permit.

11. The U.S. Environmental Protection Agency (EPA) and the Board generally classify this type of discharge as a minor discharge. If an individual discharge is classified as a major discharge, it will not be covered by this General Permit.

12. This Order does not preempt or supersede the authority of the State Department of Fish and Game or local agencies to prohibit, restrict, or control the discharge of wastewater subject to their control.

13. On 17 April 1997, the State Water Resources Control Board adopted Waste Discharge Requirements, Order No. 97-03-DWQ, NPDES General Permit No. CAS000001 for the regulation of storm water discharges associated with industrial activities. Order No. 97-03-DWQ, Special Condition D-1, authorizes non-storm water discharges including fire hydrant flushing, potable water sources, including potable water related to the operation, maintenance, or testing of potable water systems, drinking fountain water, atmospheric condensates including refrigeration, air conditioning, and compressor condensate, irrigation drainage, landscape watering, springs, groundwater, foundation or footage drainage, sea water infiltration and discharges from fire fighting activities. Order No. 97-03-DWQ, Special Condition No. D-1-c, allows the Regional Board to establish additional monitoring and reporting requirements for these storm water discharges. The Board finds that the additional monitoring and reporting requirements and discharge limitations contained in this Order are necessary to assure compliance with water quality objectives and standards and that coverage under this Order is therefore necessary for the following discharges listed in Order No. 97-03-DWQ, Special Condition No. D-1: fire hydrant flushing; potable water sources, including potable water related to the operation, maintenance, or testing of potable water systems, atmospheric condensates including refrigeration, air conditioning and compressor condensate, and groundwater dewatering systems.

    On 19 August 1999, the State Water Resources Control Board adopted Waste Discharge Requirements, Order No. 99-08-DWQ, NPDES General Permit No. CAS000002 for the regulation of storm water discharges associated with construction activities. Order No. 99-08-DWQ, Special Provision No. C. 3, allows for the limited discharge of non-stormwater discharges where they do not cause or contribute to a violation of any water quality standard. Receiving Water Limitations in Order No. 99-08-DWQ require compliance with all applicable water quality standards including those contained in the Basin Plan. The Board finds that Order No. 99-08-DWQ provides adequate water quality protection and compliance monitoring. Non-stormwater discharges related to construction activities may continue to be regulated under Order No. 99-08-DWQ while construction activities continue.

14. The Board has adopted a Water Quality Control Plan, 4th Edition, for the Sacramento/San Joaquin River Basins (hereafter Basin Plan). The Board has also adopted a Water Quality Control Plan for the Tulare Lake Basin (5D). The Basin Plans designate beneficial uses, establishes water quality

objectives, and contains implementation programs and policies to achieve water quality objectives for all waters of the Basin. This Order implements the Plans.

15. EPA adopted the National Toxics Rule on 5 February 1993 and the California Toxics Rule (CTR) on 18 May 2000. The State Board has adopted an Implementation Plan for the CTR. The Rules contains water quality standards applicable to this discharge. Federal regulations also require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard, including the Rule. The Board finds that the discharges prescribed by this Order do not have a reasonable potential to cause or contribute to an in-stream excursion above a water quality objective. If information becomes available that shows there is a reasonable potential for the discharge to exceed any water quality objective or standard the discharge shall be immediately terminated. The discharge may not be resumed until authorized by the Executive Officer, individual waste discharge requirements are issued or the discharge may be prohibited.

16. The designated beneficial uses of ground water within the Central Valley Region are municipal, industrial, and agricultural supply, except where lesser beneficial uses are designated in the Water Quality Control Plans.

17. The beneficial uses of surface waters, as identified in Table II-1 of the Basin Plan, are municipal and domestic supply, agricultural irrigation, agricultural stock watering, industrial process water supply, industrial service supply, hydro power generation, body contact water recreation, canoeing and rafting, other non-body contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, cold spawning habitat, wildlife habitat, and navigation. The beneficial uses of water bodys identified in the Basin Plan downstream of the discharge, as identified in Table II-1, shall apply. If a water body into which wastewater is discharged is not specifically identified in the Basin Plan, the Plan states "The beneficial uses of any specifically identified water body generally apply to its tributary streams." The Board finds that, for purposes of this Order where specific water bodies are not identified, the beneficial uses identified in the Basin Plan for the downstream waters are applicable to water body into which discharge occurs.

18. The Water Quality Control Plans encourage the disposal of wastewater on land where practicable, and require applicants for discharge permits to evaluate land disposal as a first alternative. Where studies show that year-round land disposal is not practicable, the Discharger must evaluate, and utilize if feasible, dry season land disposal as an alternative.

19. The Board has considered antidegradation pursuant to 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16 and finds that the subject discharges are consistent with those provisions. There will not be degradation if the requirements of the permit are met. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant. This Order provides for an increase in the volume and mass of pollutants discharged. The increase will not cause a violation of water quality objectives. The increase in the discharge allows wastewater utility service necessary to accommodate

housing and economic expansion in the area, and is considered to be a benefit to the people of the State. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. If the discharge is not consistent with these policies it will not be covered under this Order.

0. Effluent limitations, and toxic and pretreatment effluent standards established pursuant to Sections 301, 302, 304, and 307 of the Clean Water Act (CWA) and amendments thereto are applicable to the Discharge.

1. These discharges are currently governed by Waste Discharge Requirements, Order No. 93-230, adopted by the Board on 3 December 1993.

22. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21100, et seq.), in accordance with Section 13389 of the California Water Code.

23. The Board has notified interested agencies and persons of its intent to prescribe waste discharge requirements in the General Order and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

24. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

25. This Order shall serve as an NPDES permit pursuant to Section 402 of the Clean Water Act, and amendments thereto, and shall take effect upon the date of hearing, provided EPA has no objections.

IT IS HEREBY ORDERED that Order No. 93-230 is hereby rescinded and all Dischargers that file a NOI and appropriate filing fee indicating their intention to be regulated under provisions of this General Order, and all heirs, successors, or assigns, in order to meet the provisions contained in Division 7 of the California Water Code and Regulations adopted thereunder, and the provisions of the Clean Water Act and Regulations and Guidelines adopted thereunder, shall comply with the following:

A. Discharge Prohibitions:

1. Discharge of wastewater other than that described in the Findings is prohibited. The wastewater shall be free of all other pollutants. The wastewater shall not cause or threaten to cause pollution, contamination, or nuisance.

2. Discharge of contaminated ground water is prohibited.

3. The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by the attached Standard Provisions and Reporting Requirements A. 13.

B. Effluent Limitations:

1. Effluent shall not exceed the following limits:

Constituents	Units	Monthly Average	Weekly Average	Daily Maximum
BOD[1]	mg/l	10	15	30
Total Suspended Solids	mg/l	10	15	30
Settleable Solids	ml/l			0.1

[1] 5-day, 20*C biochemical oxygen demand (BOD)

2. Effluent discharged into a surface water body shall not contain chlorine in excess of 0.02 mg/l (instantaneous maximum). If the wastewater contains chlorine in excess of 0.02 mg/l, the Discharger shall certify that chlorine will be reduced to a maximum of 0.02 mg/l before wastes enter surface water.

3. Effluent discharged into a surface water body shall not have a pH less than 6.5 nor greater than 8.5.

4. The average dry weather (May through October) discharge flow shall not exceed 0.25 MGD unless the discharge is four months or less in duration in which case there is no flow limit.

C. Solids Disposal:

1. Collected screenings and other solids removed from liquid wastes shall be disposed of in a manner that is consistent with Chapter 15, Division 3, Title 23, of the CCR and approved by the Executive Officer.

2. Any proposed change in solids use or disposal practice shall be reported to the Executive Officer and EPA Regional Administrator at least 90 days in advance of the change.

D. Receiving Water Limitations:

Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit. The discharge shall not cause the following in the receiving water:

1. Concentrations of dissolved oxygen to fall below 7.0 mg/l.

2. Oils, greases, waxes, or other materials to form a visible film or coating on the water surface or on the stream bottom.

3. Oils, greases, waxes, floating material (liquids, solids, foams, and scums) or suspended material to create a nuisance or adversely affect beneficial uses.

4. Aesthetically undesirable discoloration.

5. Fungi, slimes, or other objectionable growths.

6. The turbidity to increase as follows:

   a. More than 1 Nephelometric Turbidity Units (NTUs) where natural turbidity is between 0 and 5 NTUs.

   b. More than 20 percent where natural turbidity is between 5 and 50 NTUs.

   c. More than 10 NTUs where natural turbidity is between 50 and 100 NTUs.

   d. More than 10 percent where natural turbidity is greater than 100 NTUs.

7. The normal ambient pH to fall below 6.5, exceed 8.5, or change by more than 0.5 units.

8. Deposition of material that causes nuisance or adversely affects beneficial uses.

9. The normal ambient temperature to be altered more than 5°F.

10. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.

11. Radionuclides to be present in concentrations that exceed maximum contaminant levels specified in the California Code of Regulations, Title 22; that harm human, plant, animal or aquatic life; or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

12. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.

13. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.

14. Violation of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board pursuant to the CWA and regulations adopted thereunder.

E. Provisions:

1. Dischargers currently covered by Order No. 93-230 are automatically granted coverage under this Order for a period of 90-days following adoption, during which time the Discharger may file a Notice of Intent (NOI) for coverage under this Order. Coverage under this Order is terminated after the 90-day period unless a new NOI has been submitted. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revocation of authorization to discharge under this Order.

2. Individual owners of the real property at which the discharge will occur are ultimately responsible for ensuring compliance with these requirements. Individuals and companies responsible for site operations retain primary responsibility for compliance with these requirements, including day-to-day operations and monitoring. Enforcement actions will be taken against landowners in the event that enforcement actions against site operators are ineffective or would be futile, or that enforcement is necessary to protect public health or the environment.

3. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating and site management personnel shall be familiar with its contents.

4. Water suppliers with numerous discharge points may elect to prepare and implement a Pollution Prevention and Monitoring and Reporting Plan (PPMRP) rather than identify and monitor each discharge as required in the NOI (Attachment A) and Monitoring and Reporting Program (Attachment C). The PPMRP must be submitted with the NOI prior to discharge and is subject to approval by the Regional Board Executive Officer. The PPMRP shall include as a minimum the elements identified in Attachment B.

5. The Discharger shall use the best practicable cost-effective control technique currently available to limit mineralization to no more than a reasonable increment.

6. The Discharger shall comply with all the applicable items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provision(s). "

7. The Discharger shall comply with the attached Monitoring and Reporting Program contained in Attachment C of this Order, and any revisions thereto, as ordered by the Executive Officer.

   When requested by EPA, the Discharger shall complete and submit Discharge Monitoring Reports. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program for Discharger Self Monitoring Reports.

8. This Order expires on **1 June 2005.**

9. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office.

   To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name, address, and telephone number of the persons responsible for contact with the Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision D.6 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

I, **GARY M. CARLTON,** Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 16 June 2000.

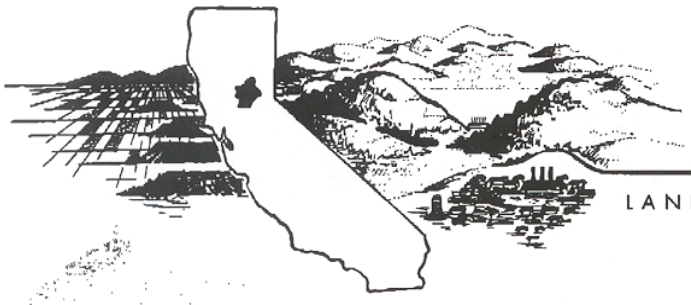
GARY M. CARLTON, Executive Officer

Attachments

RPM:lm

APPENDIX D

LETTERS OF SUPPORT



Butte County

LAND OF NATURAL WEALTH AND BEAUTY

WATER AND RESOURCE CONSERVATION
1 COUNTY CENTER DRIVE • OROVILLE, CALIFORNIA 95965-3398
(530) 538-4343 • FAX: (530) 538-3807 • bcwater@buttecounty.net

ED CRADDOCK
Director

November 26, 2002

Ray Auerbach
Manager
Paradise Irrigation District
PO Box 2409
Paradise, Ca 95967

Dear Mr. Auerbach:

I'm writing to support the application for a Proposition 13 Urban Water Conservation Capital Outlay Grant for Paradise Irrigation District (PID). Butte County's Water Inventory and Analysis, funded under Proposition 204, has shown that the Paradise Ridge can face water supply shortages during one severe drought year similar to 1977. The need for additional water supplies on the Paradise Ridge led to the execution of a Memorandum of Understanding (MOU) between the County, Del Oro Water Company and PID in January 2001. The MOU helps ensure collaborative efforts in creating water supplies through efficient water management.

In my many years with the Department of Water Resources, it became apparent that leak detection, repair and main replacement were the most cost-effective urban water management practices. PID's efforts toward reducing losses in their system have been successful over the past two decades, and upgrading their program is important to reduce their "unaccounted for water" further. By improving their program, PID should be able to reduce their current system losses of 17% during this decade nearer to the statewide average of 10%.

It is critically important that citizens in area of origin counties are protected from water shortages, while millions of acre-feet are being stored for use elsewhere in California.

Sincerely,

Ed Craddock

TOWN OF PARADISE
5555 SKYWAY • PARADISE, CALIFORNIA 95969-4931

November 25, 2002

California Department of Water Resources
Office of Water Use Efficiency
P.O. Box 942836
Sacramento, Ca 94236-0001
Attention: Marsha Prillwitz

Subject: Support for Paradise Irrigation District's Proposition 13 Grant Applications

The Town of Paradise is impacted in many ways by the Paradise Irrigation District's older leaking water mains. The projects proposed in the current grant applications will provide enhanced fire protection, help assure an adequate water supply for existing and future residents of the Town, and eliminate traffic hazards and inconvenience due to a large number of emergency repairs to water mains.

The District's main replacements are generally of a larger size than the existing mains to provide adequate fire flows to the area served by the new mains. This is extremely important in our foothill town that can be subject to devastating wildland fires.

The reduction in water losses due to leakage from older steel mains will help to assure an adequate water supply for our current residents, and improve the District's ability to supply water to new developments in accordance with the Town's General Plan.

Although the District has made major strides in replacing older mains and reducing leaks, it is apparent that additional funding is needed to accelerate their programs.

If you have any questions feel free to call me at (530) 872-6291.

Sincerely,

Charles L. Rough Jr.
Town Manager

Kim K. Yamaguchi
Supervisor, Fifth District

747 Elliott Road
Paradise, Ca 95969

Phone: (530) 872-6304 Fax: (530) 872-6339
E-Mail: KYamaguchi@ButteCounty.net

December 2, 2002

California Department of Water Resources
Office of Water Use Efficiency
P.O. Box 942836
Sacramento, CA. 94236-0001
Attention: Marsha Prillwitz

Subject: Support for Paradise Irrigation District Grant Application

Dear Members,

I would like to support the Paradise Irrigation District's grant application under Proposition 13 Urban Water Conservation Grant Program. The District has been working hard to replace and repair the existing water delivery system and has made strident gains to date. The old antiquated system had numerous leaks and weak points that had long been neglected. The P.I.D. implemented an ambitious repair and replace plan that has shown much success. However, the District still needs an aggressive replacement program to continue the success, and is in much need of additional funds to keep the beneficial progress continuing in our community.

I, along with the Butte County Water and Resource Department, and P.I.D. have been working together to find additional sources of water, and programs of water conservation to benefit the 5th District. Although some of the solutions to our water shortage are possible to implement, they are costly and years away from implementation. The main replacement program has had a major impact in curing the water loss through leaks. We, the community of 27,000 citizens, have only 12,500 acre feet of water storage capacity, and any loss of water represents a significant impact.

Please help our community and its citizens by granting us the ability to help ourselves better manage the precious natural resource of water. Thank you and God Bless America.

Sincerely,

Kim K.Yamaguchi,
Butte County Supervisor
District 5

APPENDIX E

BENEFIT / COST ANALYSIS:

RATIONALE AND SUPPORTING CALCULATIONS

REGULAR MEETING
BOARD OF DIRECTORS
PARADISE IRRIGATION DISTRICT
January 9, 2002

The regular meeting of the Board of Directors of the Paradise Irrigation District was called to order at 7:00 p.m. by President Frank Caunt.

ROLL CALL

PRESENT: Directors Claude Powers, Stan Zemansky, John Heinke, Rick Hall, and President Frank Caunt.
ABSENT: None.
ALSO PRESENT: Manager Ray Auerbach, Treasurer Ron Kresnicka, Water Treatment Plant Superintendent Rick Terrano, Field Superintendent John Price, Assistant Engineer Neil Essila, URS representatives Noel Wong and Gil Lawton, a few visitors, and a member of the press.

CONSENT AGENDA APPROVED

It was MOVED by Director Powers, Seconded by Director Zemansky, that the Consent Agenda be approved. (Copy attached hereto and made a part of these Minutes.)
AYES: Directors Powers, Zemansky, Caunt, Heinke, and Hall.
NOES: None.
ABSENT: None.

PRESENTATION BY URS – 204 FEASIBILITY GRANT STUDY

Manager Auerbach stated that one and one/half years ago the District received a 204 Grant under the California Safe, Clean, Reliable Water Supply Act from the Department of Resources to obtain a local projects feasibility study grant and introduced Noel Wong and Gil Lawton, URS Consultants, to give a presentation on the final reports on Geotechnical Services for Feasibility Studies for Raising Paradise Dam and for Modifying Restricted Reservoir Level of Magalia Dam. Mr. Wong noted that Gilles Bureau was the leader of the Magalia portion of the project. Mr. Lawton reviewed the history of the construction of Paradise Dam and reviewed, illustrated by overhead projection, and discussed with the Board, two potential methods of raising the dam, three alternative levels of raise of the dam, spillway alternatives, conceptual level estimated construction costs and cost comparison, and other considerations regarding facilities and reservoir operation during construction. He noted that preliminary environmental review did not identify any major "Fatal Flaw", and recommended potential issues to be addressed in the full environmental review of the project. He further provided a history of construction of Magalia Dam, and reviewed and discussed with the Board an updated stability analyses concluding that the dam could safely be raised ten feet in elevation, which would require presentation to the Division of Safety of Dams for review and approval. The Manager and Board members discussed benefits of raising Magalia Dam including: additional storage, reduced pumping costs, and aesthetic value. Manager Auerbach expressed the District's appreciation for the valuable information provided by the study.

ENGINEERING SOFTWARE PURCHASE APPROVED

Assistant Engineer Essila reviewed a memorandum with the Board regarding purchase of software for the Engineering Office, and Manager Auerbach added that it is important to keep the mapping program going to keep updated information available for Field personnel use, adding that a presentation would be provided for the Board in the near future.

It was MOVED by Director Hall, Seconded by Director Caunt, to authorize purchase of one new site license for Auto CAD Map 5, upgrade the existing site license from AutoCAD May 5, and purchase AutoCAD Subscription Program for each site license for one year, $5,071.65.
AYES: Directors Powers, Zemansky, Caunt, Heinke, and Hall.
NOES: None.
ABSENT: None.

MANAGER'S REPORT

Manager Auerbach reviewed the Manager's Report with the Board, and discussed snow and rain runoff in the watershed with visitor Joe Frank and Director Caunt.

TREASURER'S REPORT ACCEPTED

Treasurer Kresnicka reviewed the Treasurer's Report with the Board, reviewing the cash position, consumption, energy costs, 204 Grant reimbursement, and the auditor's progress on recalculating the bond refunding issue, and it was
MOVED by Director Hall, Seconded by Director Powers, to accept the Treasurer's Report for the period ending November 30, 2001.
YES: Directors Powers, Zemansky, Caunt, Heinke, and Hall.
NOES: None.
ABSENT: None.

DOWC WATER SUPPLY ISSUES

Manager Auerbach noted that Del Oro Water Company's (DOWC) small amount of stored water will soon spill. He noted that DOWC is going ahead with design of the two-mile pipeline in the Lime Saddle area, and will be looking for funding for the project.

SURPLUS WATER USERS AGREEMENTS APPROVED

Manager Auerbach noted that the Board has received the two annual Surplus Water Users Agreements for review, and it was
MOVED by Director Powers, Seconded by Director Hall to approve two Annual Surplus Water Users Agreements for the calendar year 2002.
YES: Directors Powers, Zemansky, Caunt, Heinke, and Hall.
NOES: None.
ABSENT: None

RESO. 2002-01 BCB FINANCIAL AUTHORIZATION

It was MOVED by Director Zemansky, Seconded by Director Caunt to adopt Resolution 2002-01 authorizing of officials for financial transactions for District accounts with Butte Community Bank.
YES: Directors Powers, Zemansky, Caunt, Heinke, and Hall.
NOES: None.
ABSENT: None.

WARRANTS APPROVED

It was MOVED by Director Zemansky, Seconded by Director Caunt, that General Fund warrants number 27496 through 27562 totaling $147, 526.92 be approved.
AYES: Directors Powers, Zemansky, Caunt, Heinke, and Hall.
NOES: None.
ABSENT: None.

ADJOURNMENT

It was MOVED by Director Powers, Seconded by Director Zemansky, that the meeting be adjourned. The meeting was adjourned at 9:24 p.m.

Frank G. Caunt, President

Katherine M. Welborn, Secretary

REGULAR MEETING
BOARD OF DIRECTORS
PARADISE IRRIGATION DISTRICT
AUGUST 21, 2002

The regular meeting of the Board of Directors of the Paradise Irrigation District was called to order at 1:30 p.m. by President Frank Caunt.

ROLL CALL

PRESENT: Directors Claude Powers, Stan Zemansky, John Heinke, Rick Hall, and President Frank Caunt.
ABSENT: None.
ALSO PRESENT: Manager Ray Auerbach, Field Superintendent John Price, Office Manager Wendy Rickards, Assistant Engineer Essilla a few visitors, and members of the Press.

CONSENT AGENDA APPROVED EXCEPTING MAY 1, AND 15, 2002 MINUTES

Director Hall stated that the votes on Closed Session issues were reported at the May 1, 2002 meeting and should be part of the minutes.
Director Zemansky stated that at the August 21, 2002 meeting he had stated, regarding the RDA, that: the original area was "120 acres and has expanded to 615 acres south to Neal Road, north to Town Limits, over to Clark Road, and west to include Black Olive and PID headquarters", and requested that this statement be included in the minutes.
It was MOVED by Director Zemansky, Seconded by Director Powers to approve the Consent Agenda with the exception of the May 1, and May 15, 2002 minutes.
AYES: Directors Powers, Zemansky, Caunt, Heinke, and Hall.
NOES: None.
ABSENT: None.

VISITOR'S COMMENTS

Visitor Liz Kassa stated that Director Zemansky has mentioned water problems, and requested what the water problems are. Director Zemansky responded that the District is limited to a firm yield of 7300 acre feet of water, and water usage is in excess of 7700 acre feet which is beyond the firm yield, adding that in case of drought there is possibly 12,000 acre feet of water in storage, adding that more water is needed if the PID boundaries are increased, and referenced information from the Urban Water Management Plan. Director Caunt referenced other data. Ms. Kassa questioned why the refusal of FHK request for water for fire protection only. Director Caunt responded that drought situations need to be considered and Legal Counsel was contacted.
Ms. Kassa questioned when Town Manager Rough would address the Board regarding the RDA, and Manager Auerbach responded that scheduling problems precluded Mr. Rough's attending an August meeting and scheduling is still being worked on.

COMMITTEE REPORTS

Manager Auerbach stated that the LAFCo billing is in the Butte County Auditor's office, and has not been received by the District as yet. Director Caunt stated that the Finance Committee meeting was cancelled as it was not expected to be a public meeting and the Agenda could not be amended. Manager Auerbach stated that the Butte County/PID/DOWC MOU discussed the PID grant study, Del Oro Water Company (DOWC) environmental work on the Lime Saddle pipeline, which needs approval from the PUC to fund the CEQA work, and the Butte County project study of the Miocene Canal as a water source, and the District provided a brief review of the URS Grant study report.

WOODGLEN/ KIBLER WATER SERVICE APPROVED

Manager Auerbach reviewed a request for water service from a District Main not contiguous to property located between Woodglen Drive and Kibler Road, listing conditions, and noting that approval would expire within one year. Directors discussed the pipeline configuration in the area and conditions of approval, and it was
MOVED by Director Hall, Seconded by Director Powers to provide water service to the property identified as APN 054-132-049 subject to five recommended conditions.
AYES: Directors Powers, Zemansky, Caunt, Heinke, and Hall.
NOES: None.
ABSENT: None.

WATER SERVICE REQUEST CONTINUED

Manager Auerbach stated that the applicant has requested that consideration of request for non contiguous water service for property located on Lassen Road off Sutter Road (APN 054-220-003) be continued to a future meeting.

CHANEY LANE EASEMENT APPROVED

Manager Auerbach reviewed a request for an easement on District-owned Chaney Lane, noting that an easement was granted to various land owners in 1963, but the Pelants were not named as beneficiaries in that document. He added that the property fronts on Pearson Road but the best access is from Chaney Lane. Assistant Engineer Essilla noted that language has been added to the document to prevent interference with PID facilities in case of future repairs. Directors discussed the access, public utility easements, and the age and type of pipeline material, and it was
MOVED by Director Powers, Seconded by Director Heinke to approve the request for grant of easement as reviewed by the Manager.
AYES: Directors Powers, Zemansky, Caunt, Heinke, and Hall.
NOES: None.
ABSENT: None.

MANAGER'S REPORT

Manager Auerbach reviewed the Manager's Report with the Board noting meeting with the Division of Safety of Dams regarding raising the water level of Magalia Reservoir ten feet and maintaining the elevation during storms, noting that the report from their geotechnical staff will be transmitted to Genterra regarding the Skyway widening project. Directors discussed storm condition controls of the reservoir levels.
Manager Auerbach stated that: the LAFCo legislation, SB 1586 is being considered by the full Assembly; the Finance Committee should have another meeting regarding the Budget before the September 4 Board Meeting; and Butte County officials are working on resolution of the encroachment onto the 42-inch pipeline.

2002 ASPHALT PATCHING PROJECT BID ACCEPTED

Manager Auerbach reviewed the bids for the 2002 Asphalt Patching Project noting a few irregularities in the bid responses which have been resolved, with the low bidder being Dee Fairbanks Enterprises. Director Caunt asked Director Heinke to make a motion, and it was
MOVED by Director Heinke, Seconded by Director Zemansky, to award the 2002 Asphalt Patching Project to Dee Fairbanks Enterprises for the amount of $58,319.94.
AYES: Directors Powers, Zemansky, Caunt, Heinke, and Hall.
NOES: None.
ABSENT: None.

PRINTER/SOFTWARE PURCHASE APPROVED

Manager Auerbach and Office Manager Wendy Rickards reviewed a memorandum regarding request for Printer and Software Purchase to provide a color network laser printer to handle larger sizes of print jobs, and provided results of research of available equipment, and it was
MOVED by Director Zemansky, Seconded by Director Caunt to authorize the purchase of a color laser printer, HP8550dn, and Adobe Photoshop 7.0 from the most reasonable total price vendor with the most acceptable delivery option, with funding proposed in the 2002-03 FY Budget.
AYES: Directors Powers, Zemansky, Caunt, Heinke, and Hall.
NOES: None.
ABSENT: None.

ONSITE SPRINGBROOK TRAINING APPROVED

Manager Auerbach reviewed a memorandum regarding staff request for onsite Springbrook training to upgrade to the newest version of financial programs. Office Manager Rickards stated that the upgrade will expand capabilities of the system and is necessary to provide for further enhancements, and reviewed the costs involved. Director Caunt noted that the District was a BETA site for the Springbrook system.
It was MOVED by Director Caunt, Seconded by Director Powers to approve on-site training with Roberta Heinz from Sprinbrook for Finance and online training for Utility Billing, with the total cost not to exceed $5,000.
AYES: Directors Powers, Zemansky, Caunt, Heinke, and Hall.
NOES: None.
ABSENT: None.

Director Caunt stated he would have to leave the meeting early, and moved on to discussion of the "Preliminary Engineering Feasibility Report for Butte County, Study of Miocene and Hendricks Canals as Potential Sources of Water for the Paradise Ridge" . He stated that the study was funded by Butte County from the Lime Saddle monies. He stated that this report was couched to be in terms of DOWC but it PID is very much considered as a user of this proposal. He reviewed the considerations of uses of these canals in conjunction with the Butte County water entitlement, costs, and noting reliance on PG&E, the owners of the canals, and alluding to their adversarial relationship with Butte County. Directors discussed the "outrageous" costs entailed for a limited amount of water and agreed that this should be put on the "back burner" as far as a source of water. Manager Auerbach reviewed the mechanics of the proposal using Magalia Reservoir and Kunkle Reservoir, and suggested noting receipt of and filing the document, which can be reviewed by consultants.

It was MOVED by Director Caunt, Seconded by Director Heinke, that with consideration to the Preliminary Engineering Feasibility Report for the Miocene and Hendricks Canals as a source of water, the PID on this date does not deem the Miocene Canal and the Hendricks Canal to be of use by PID.
Director Hall commented that the Board was pretty much in consensus regarding the report, but considered that this is rather drastic action when the Board has already discussed accepting the report and putting it on the back burner for some type of investigation in the future, asking Director Caunt if he is just trying to kill the project or what. Director Caunt stated that it started out that this was a report for DOWC, and now we find it has included PID, and the PID Board did not know about this element, so this motion is to settle the record, and if future pieces of information come up the Board can reverse itself. Director Hall stated that this information has just been received and only

Director Caunt has attended meetings, whereas the rest of the Board has not had an opportunity to review the information. Director Powers stated that the District should not close the door. Following further discussion,

Director's votes were polled as follows:

AYES: Directors Caunt and Heinke.
NOES: Directors Powers, Zemansky, and Hall.
ABSENT: None.

WATER SUPPLY ALTERNATIVES DISCUSSED

Director Heinke stated that over the past years a lot of studies have been done and the Board has gone on record as giving staff direction as to where we want to go. He further stated that he considers the best supply for the District's water would be by raising Paradise Dam and working with Butte County and the State on stabilizing Magalia Dam and possibly raising this dam. He added that the District should have a direction it is going and have staff working on surveys to get that done. He noted that the Miocene Canal study shows how expensive other water can be. Director Powers stated that the current work to raise the level of Magalia reservoir is important.

Manager Auerbach agreed that this is basically where the direction is, adding that the District has a grant to look at water supply feasibility, and used overhead projection to review the grant study work plan. He stated that the study includes evaluation of water supply alternatives and determine the preferred alternative, and described the various elements of this evaluation including sharing data with Butte County and using the Department of Water Resources model. He added that the work to determine the preferred alternative must be completed before environmental review can proceed and before eminent domain procedures can be instituted. He stated that Requests for Qualifications have been sent to engineering firms, and Request for Proposals will follow, to complete the grant study. He noted that consideration of the amount of height to raise the dam includes the amount of land that will be inundated and the impact on trees and vegetation.

Discussion included consideration of obligations to Lime Saddle and if the need for water storage would be eliminated by the proposed DOWC pipeline. Manager Auerbach suggested other concerns to consider such as the 42-inch pipeline being out of service and repair of No. 1 pump station. Director Powers added that the District would not want its water rights to be jeopardized.

In response to questions from candidate Larry Duncan, Manager Auerbach reviewed the remaining funds and work to be completed for the 204 Feasibility Grant Study such as looking at the Skyway Widening project with Butte County. Director Powers noted that the District is working with the County regarding a major fix for Magalia Dam, which would also determine if and how high the dam could be raised.

AGREEMENT WITH BUTTE COUNTY FOR REIMBURSE-MENT OF URS REVIEW FOR SKYWAY PROJ.

Manager Auerbach reviewed a proposed letter agreement in which Butte County will reimburse PID for URS Corporation to review and interact with the County and Genterra Consultants, Inc. for the County's proposed project to widen the Skyway roadway across the Magalia Reservoir. Director Caunt expressed confusion regarding why Genterra pulled back their report, noting that Don Babbit is with Genterra and was Chief Engineer with the State Division of Safety of Dams (DSOD), and they would have looked at all of the data. Paul Lundbom stated that URS work is more conservative, and it is considered that a combined work effort will provide a greater united front to

DSOD. Manager Auerbach noted the request for raising the water level of Magalia Reservoir by ten feet which would result in looking at it at a different elevation, noting that URS will not have that much to review.

It was MOVED by Director Hall, Seconded by Director Powers, to accept the proposal from URS Corporation dated August 16, 2002 for Review/Interaction with County and Genterra Consultants, and authorize the Manager to execute an agreement for this work, and also approve Letter Agreement with the County of Butte, , and authorize the Manager to execute the agreement on behalf of the District.
AYES: Directors Powers, Zemansky, Caunt, Heinke, and Hall.
NOES: None.
ABSENT: None.

PENALTY FOR VIOLATION OF CODE OF ETHICS DECLINED

Director Hall stated that at the last meeting Director Zemansky presented a Code of Ethics for the Board and expressed concern that there was not some type of penalty for someone who would break this Code of Ethics, otherwise what is the use of having this sort of Code. He suggested that anyone who is in violation of the Code of Ethics be subject to a reprimand, and it was
MOVED by Director Hall, Seconded by Director Powers, that anyone who is in violation of the Code of Ethics be subject to a reprimand.
Director's votes were polled as follows:
AYES: Directors Powers and Hall.
NOES: Directors Zemansky, Heinke, and Caunt.
ABSENT: None.

ANNEXATION COMMITTEE RPTS. CONTINUED

Director Heinke requested that Agenda Item 7.b. "Annexation Committee Reports" be postponed as material was not received until Tuesday afternoon for review. Chairperson Caunt agreed and continued on to Item 7.c.

DOWC WATER SUPPLY ISSUES

Manager Auerbach reported that Del Oro Water Company is continuing to use some water, noting it is just over half of last years use at this time.

WARRANTS APPROVED

It was MOVED by Director Powers, Seconded by Director Caunt, that General Fund warrants number 28438 through 28490 totaling $179,654.15 be approved.
AYES: Directors Powers, Zemansky, Caunt, Heinke, and Hall.
NOES: None.
ABSENT: None.

ADJOURNMENT

It was MOVED by Director Hall, Seconded by Director Caunt, that the meeting be adjourned. The meeting was adjourned at 3:30 p.m

Frank Caunt, President

Katherine M. Welborn, Secretary

Appendix E, Table 1. Leak Detection Background Data

Feet Surveyed	395,968	
Miles Surveyed	75.0	
"Leaks" detected	66	
Actual leaks found	47	
Dry holes	19	
Estimated gpm losses, total	149.25	gpm
Leakage Rate Reduction	1.99	gpm/mile
"Leaks" per mile	0.88	leaks/mile

Appendix E. Table 2. Economic Analysis Background Data

Additional Reservoir Capacity	5,000	acre-feet	URS P-II RE Wall
Firm Yield Factor	0.5	(1/year)	Factor @ current storage
Additional Reservoir Firm Yield	2,500	acre-feet/yr	
Estimated Construction Costs	5,835,000	dollars	URS P-II RE Wall
Estimated Engineering Costs	875,250	dollars	15%
Estimated Land Acquisition Cost	1,200,000	dollars	120 acres @ $10,000/acre
Total Cost for Reservoir Expansion	7,910,250	dollars	
Unit Cost of Additional Storage Capacity	3,164	$/acre-ft/yr	
Treatment Plant Capacity (mgd)	19.04	mgd	From submission to DOHS
Treatment Plant Capacity (acre-ft/year)	21,327	acre-ft/yr	
Capital Cost of Treatment Plant	12,880,355	dollars	per WR
Unit Cost of Treatment Capacity	603.93	$/acre-ft/yr	
Pumping Plant Capacity (mgd)	25	mgd	Raw Water Pumping Station Predesign Report
Pumping Plant Capacity (acre-ft/year)	28,003	acre-ft/yr	
Capital Cost of Pumping Plant	2,395,000	dollars	per WR
Unit Cost of Raw Water Pumping Capacity	85.53	$/acre-ft/yr	
Total Unit Capital Cost of Capacity	3,853.56	$/acre-ft/yr	
Incremental Cost of Treatment (energy & chemicals)	33.39	$/acre-ft	per RT 11/20/02
Average Cost Per Leak Repair	522	$/leak	per JP 11/20/02

Table E, Table 3. Benefit / Cost Ratio Detailed Analysis - Leak Detection and Repair Program

Leakage Rate Reduction	1.99	gpm/mile	
District survey cost per mile	$133.10	/mile	
Average Cost Per Leak Repair	522	$/leak	
Cost per mile to assist Leak Consultant	56.00	/mile	
Time after survey to resume previous no. of leaks	2	years	

Incremental Cost of Treatment (energy & chemicals)	33.39	$/acre-ft
Total Unit Capital Cost of Capacity	3,853.56	$/acre-ft/yr
Project life	20	years
Interest Rate	6%	
Project Administration: Percent of Total Project Costs	5%	

Year	Miles Affected	Miles Surveyed	Number of Detected Leaks	Initial Leak Rate Reduction (gpm)	Avg Annual Leak Rate Reduction (gpm)	Annual Water Savings Acre-feet	Cost of Treatment, Water Saved	Current Value Treatment, Water Saved	Consultant Leak Detection	District Survey Cost	Repair Cost	Project Admin Costs	Total Cost	Current Value of Survey & Repair Costs
0	130	130	114.4	258.7	0.0	0.0	$0.00	$0.00	$33,868.00	$7,280.00	$67,860.00	$5,450.40	$114,458.40	$114,458.40
1	128	0	0.0	127.4	193.0	308.5	$10,302.20	$9,719.05	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2	126	126	110.9	250.8	125.4	200.4	$6,691.12	$5,955.07	$0.00	$7,056.00	$65,772.00	$3,641.40	$76,469.40	$68,057.49
3	124	0	0.0	123.4	187.1	299.0	$9,983.57	$8,382.40	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
4	122	122	107.4	242.8	121.4	194.0	$6,478.70	$5,131.74	$0.00	$6,832.00	$63,684.00	$3,525.80	$74,041.80	$58,648.04
5	120	0	0.0	119.4	181.1	289.5	$9,664.95	$7,222.21	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
6	118	118	103.8	234.8	117.4	187.7	$6,266.29	$4,417.48	$0.00	$6,608.00	$61,596.00	$3,410.20	$71,614.20	$50,485.19
7	116	0	0.0	115.4	175.1	279.9	$9,346.32	$6,215.84	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
8	114	114	100.3	226.9	113.4	181.3	$6,053.87	$3,798.27	$0.00	$6,384.00	$59,508.00	$3,294.60	$69,186.60	$43,408.53
9	112	0	0.0	111.4	169.2	270.4	$9,027.70	$5,343.48	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
10	110	110	96.8	218.9	109.5	174.9	$5,841.45	$3,261.84	$0.00	$6,160.00	$57,420.00	$3,179.00	$66,759.00	$37,277.88
11	108	0	0.0	107.5	163.2	260.8	$8,709.07	$4,587.83	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
12	106	106	93.3	211.0	105.5	168.6	$5,629.04	$2,797.46	$0.00	$5,936.00	$55,332.00	$3,063.40	$64,331.40	$31,970.73
13	104	0	0.0	103.5	157.2	251.3	$8,390.45	$3,933.77	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
14	102	102	89.8	203.0	101.5	162.2	$5,416.62	$2,395.78	$0.00	$5,712.00	$53,244.00	$2,947.80	$61,903.80	$27,380.11
15	100	0	0.0	99.5	151.3	241.7	$8,071.82	$3,368.09	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
16	98	98	86.2	195.0	97.5	155.9	$5,204.20	$2,048.62	$0.00	$5,488.00	$51,156.00	$2,832.20	$59,476.20	$23,412.59
17	96	0	0.0	95.5	145.3	232.2	$7,753.20	$2,879.26	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
18	94	94	82.7	187.1	93.5	149.5	$4,991.79	$1,748.84	$0.00	$5,264.00	$49,068.00	$2,716.60	$57,048.60	$19,986.62
19	92	0	0.0	91.5	139.3	222.7	$7,434.58	$2,457.22	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
20	90	90	79.2	179.1	89.6	143.1	$4,779.37	$1,490.23	$0.00	$5,040.00	$46,980.00	$2,601.00	$52,020.00	$16,220.08
				Totals:		4,374	ac-ft	$87,154.49	$33,868.00	$67,760.00	$631,620.00	$36,662.40	$767,309.40	$491,305.66

Minimum Annual Capacity Savings During Project Life	143.1	acre-feet
Value of Capacity Savings	$551,589.87	
Current Value of Total Benefits (Capacity Savings + Treatment Cost Savings)	$638,744.36	
Current Value of Project Costs	$491,305.66	
Benefit / Cost Ratio	1.30	
Proposed Grant Funded Share of Project Costs (Year 0)	$114,458.40	
Proposed District Funded Share of Project Costs (Years 1-20)	$652,851.00	